Agrément South Africa Certification of Asphalt Rejuvenators

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Acknowledgements

TRH21 Committee

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Outline of presentation

- Background
- Proposed Performance Tests
- Certification Process

Background: What is Asphalt Rejuvenator?

A proprietary product with suitable properties to extend the lifetime of an aged asphalt mix layer (or seal), by delaying the appearance of fatigue-related distresses such as cracking and potholing, without increasing the risk of skid-related accidents.

Applied to the surface of the layer, and is differentiated from the rejuvenator used in recycled asphalt.

- Different mechanisms of rejuvenation, therefore the performance requirements differ

Performance testing of Asphalt Rejuvenator

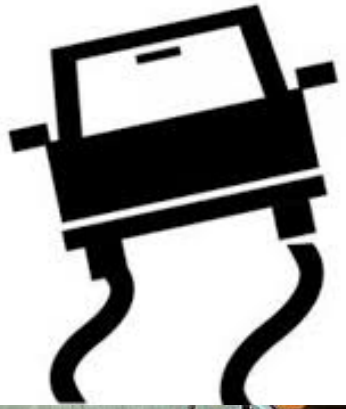
Aim is to prevent inappropriate products being applied in the market that only have a cosmetic effect.

Field Testing: Select trial installation site

Target:

- Skid resistance
- Binder stiffness after sufficient time has elapsed
- Resistance to abrasion
- Visual condition
- Quantification of Volatile material

Performance testing: Skid Resistance



Recommended method: SCRIM or Griptester

Treated vs Untreated

Target:

- Maximum 20% Loss
- May not cause instability when car turns 90°at 10 km/h
- May not fall below the minimum standard applicable
- 24 hours after Installation

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Performance testing: Binder Stiffness

After binder recovery: 165 - 170°C

NB: Only recover the top 10 mm of the surface (Must be asphalt for the trial)

Performance testing: Binder Stiffness

Recommended method: ASTM D7175

Target: Treated vs Untreated

- Phase angle increase – monitor only (1.5 or 2°)
- G* improve (decrease) by 15 % minimum
- 3 months after installation

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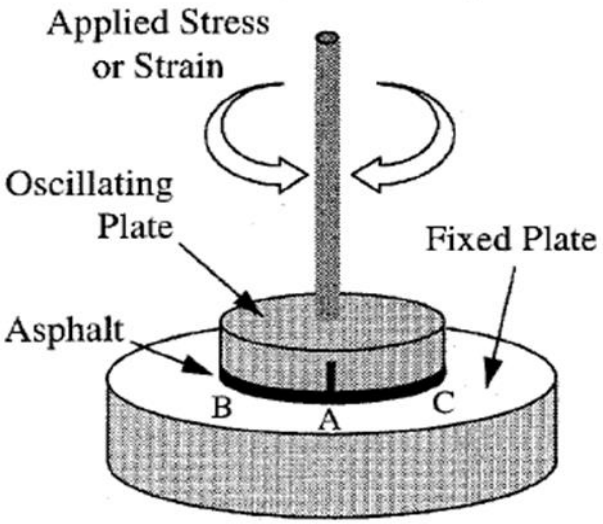
Interpretation of G* and δ



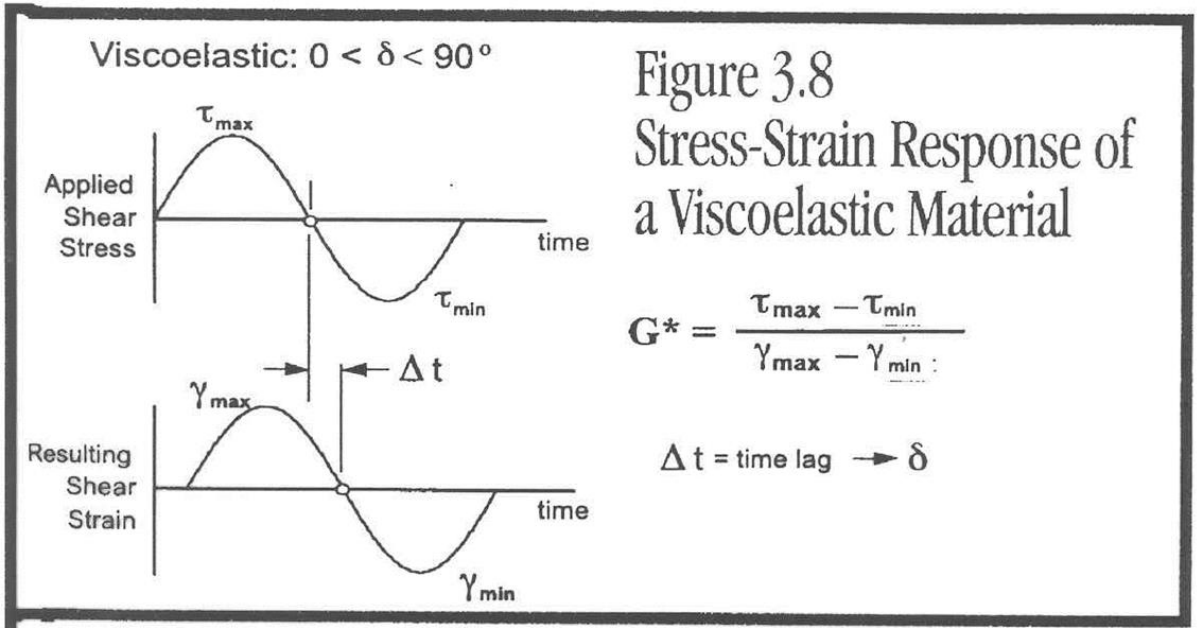


Figure 3.8
Stress-Strain Response of a Viscoelastic Material

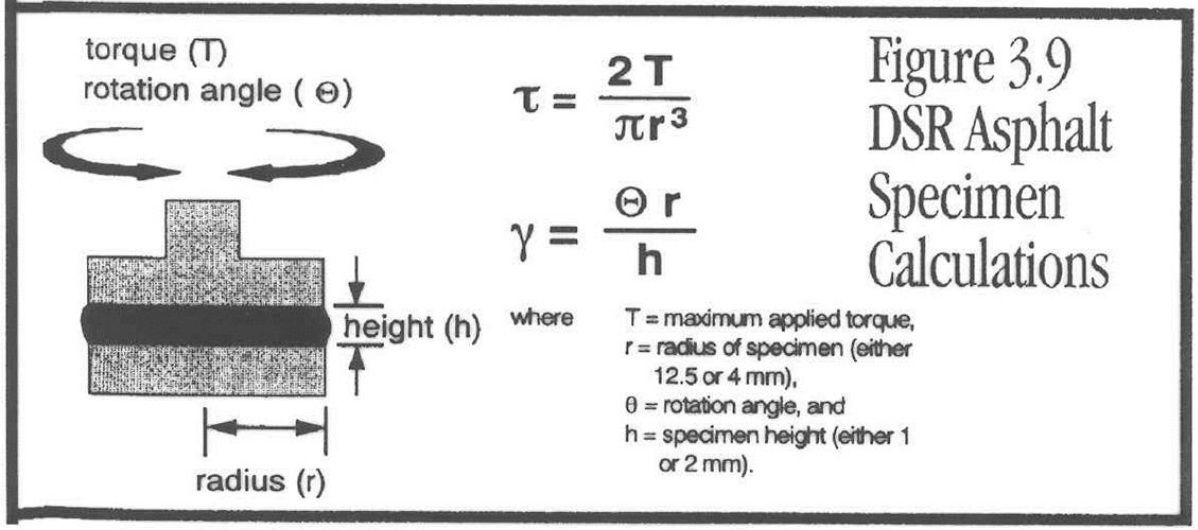
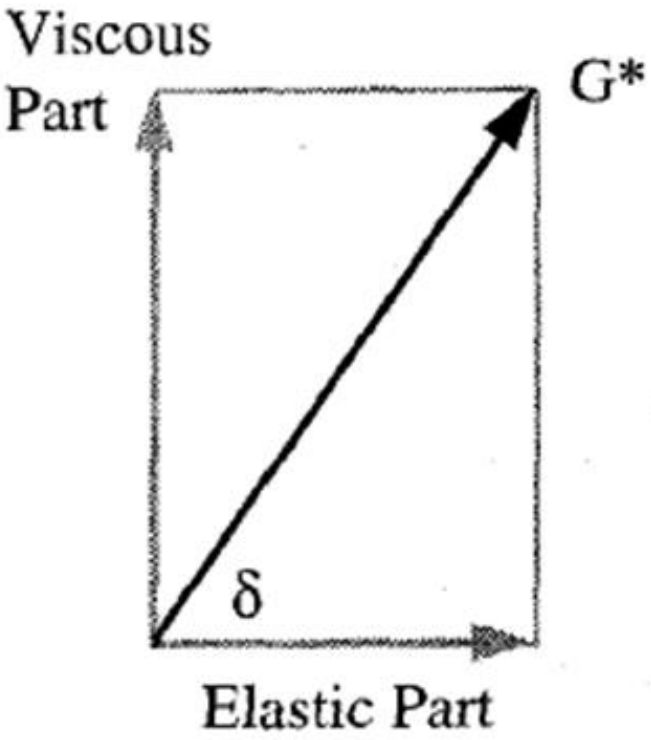
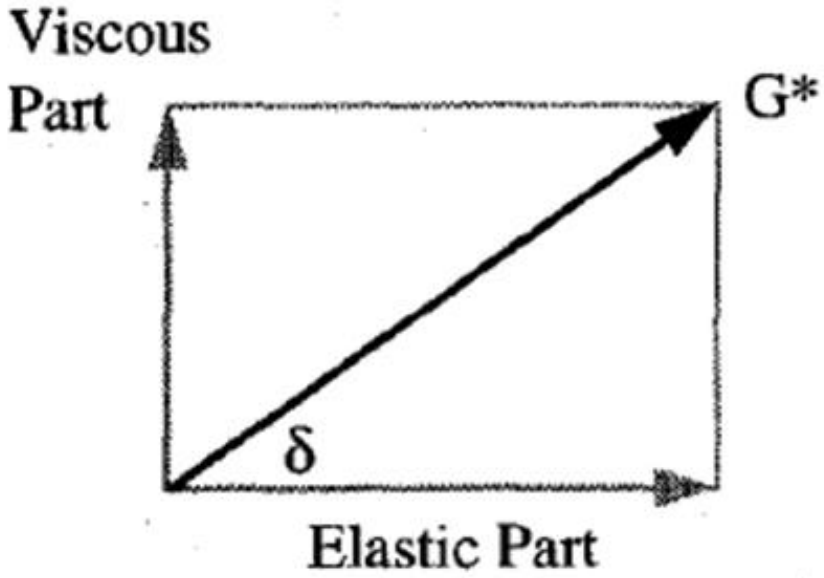


Figure 3.9
DSR Asphalt Specimen Calculations

Interpretation of G* and δ





Performance testing: Abrasion resistance

Recommended method:
Cantabro

Only top 10 mm of the cores.
Treated vs Untreated

Target: Treated vs Untreated

- Minimum 20% decrease in mass loss
- 3 months after Installation

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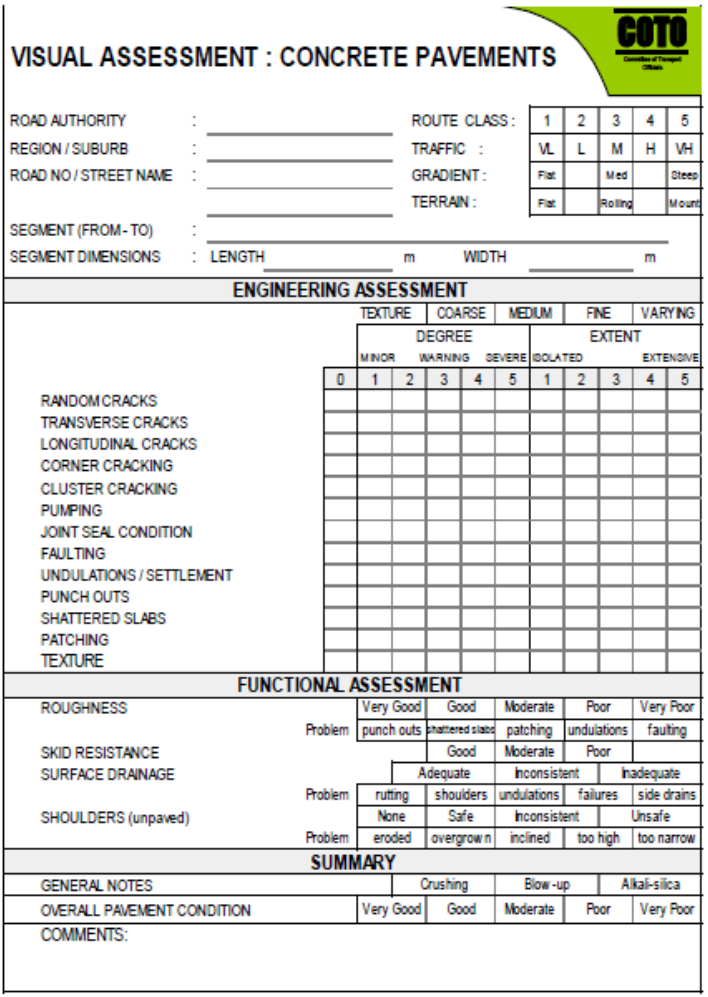
Performance testing: Visual Assessment



VISUAL ASSESSMENT : CONCRETE PAVEMENTS

COTO

ROAD AUTHORITY :
REGION / SUBURB :
ROAD NO / STREET NAME :
SEGMENT (FROM - TO) :
SEGMENT DIMENSIONS : LENGTH m WIDTH m

ROUTE CLASS :	1	2	3	4	5
TRAFFIC :	VL	L	M	H	VH
GRADIENT :	Flat		Med		Steep
TERRAIN :	Flat		Rolling		Mount

ENGINEERING ASSESSMENT

	TEXTURE	COARSE	MEDIUM	FINE	VARYING
	DEGREE			EXTENT	
	MINOR	WARNING	SEVERE	ISOLATED	EXTENSIVE
	0 1 2	3 4	5	1 2 3	4 5
RANDOM CRACKS					
TRANSVERSE CRACKS					
LONGITUDINAL CRACKS					
CORNER CRACKING					
CLUSTER CRACKING					
PUMPING					
JOINT SEAL CONDITION					
FAULTING					
UNDULATIONS / SETTLEMENT					
PUNCH OUTS					
SHATTERED SLABS					
PATCHING					
TEXTURE					

FUNCTIONAL ASSESSMENT

ROUGHNESS	Very Good	Good	Moderate	Poor	Very Poor
Problem	punch outs	shattered slabs	patching	undulations	faulting
SKID RESISTANCE		Good	Moderate	Poor	
SURFACE DRAINAGE		Adequate	Inconsistent		Inadequate
Problem	rutting	shoulders	undulations	failures	side drains
SHOULDERS (unpaved)	None	Safe	Inconsistent		Unsafe
Problem	eroded	overgrown	inclined	too high	too narrow

SUMMARY

GENERAL NOTES		Crushing	Blow-up		Alkali-silica
OVERALL PAVEMENT CONDITION	Very Good	Good	Moderate	Poor	Very Poor

COMMENTS:

Recommended method: TMH 9

Treated vs Untreated

Target:

- Report only
- Before installation, After 30 days, 3 months, 6 months, 12 months

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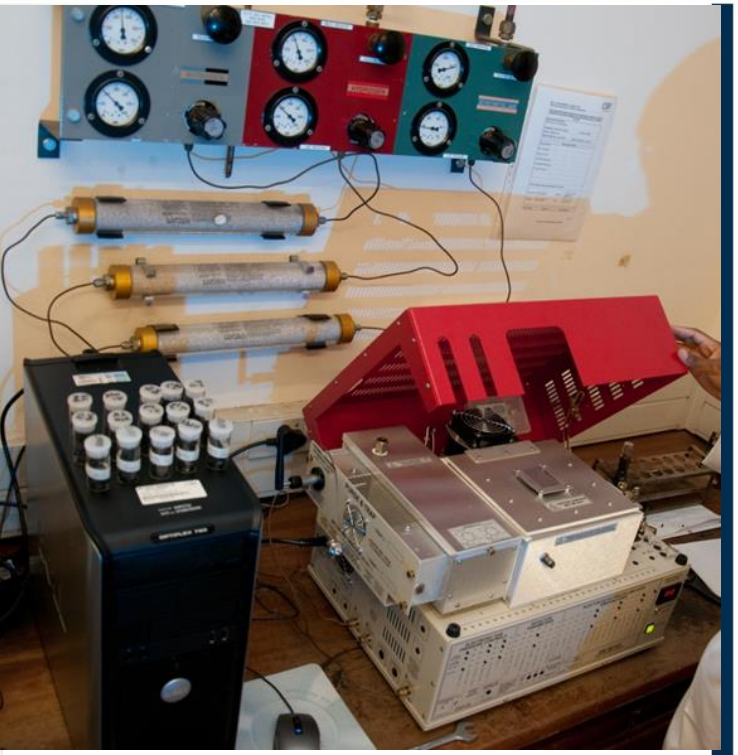
Performance testing: Visual Assessment



Recommended method: Gas Chromatography

Treated vs Untreated

Target:

- Report only
- Before installation, After 30 days, 3 months, 6 months, 12 months
- Monitor Relationship between volatile dissipation and visual assessment

Implementation: Certification Process

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Certification process is laid out in the interim guideline

- Demonstration of Quality management system,
- Detailed method statement for the storage, handling and application of the product
- Method statement must reference an accurate MSDS
- Method Statement and MSDS must conform to the OHS Act

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Implementation: Certification Process

Proof of performance at a minimum of one previous site older than one year

One installation trial

- Interim Certification after 3 months
- Full Certification after 12 months

Don’t wait until it is too late

Don’t have unrealistic expectations